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Pesticides suspected of making bees sick

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MY VOICE: Dr Reese Halter

With more than 185 South Dakotans keeping bees and more than 100 commercial beekeepers, pollination is an important industry in the state. In fact, South Dakota ranks among the top five states for the number of hives.

Almost everyone enjoys the highly desirable, mild-flavored, light-colored alfalfa-sweet clover blend of honey that South Dakota produces. Recently, however, the winter and spring bee survey numbers from across the nation were released. The numbers were startling: Our humble honeybees are sicker than ever.

Honeybee deaths this year are much higher than those reported last year. This year, the death rate is 34 percent, up from last year's rate of 29 percent. On average, beekeepers in the United States lost 42 percent of their operational bees in 2009-10 compared with 23 percent in 2008-09. This loss is more than three times greater than what is considered acceptable.

Moreover, last year marked record-low honey production. Honey production dropped by almost 20 million pounds, or 12 percent, to 144 million pounds.

More than 50 billion honeybees have perished within the past year in the United States. Scientists call it colony collapse disorder. When honeybees get sick, they will not return to the colony. Nature designed these social creatures, like ants, not to infect one another when they get ill. The queen bee is the only insect left in the hive; helpless, she, too, dies quickly.

Worldwide, honeybees account for at least \$250 billion of commerce annually. Every continent except Australia is suffering badly from the decline of bees.

As early as 2005, some of my colleagues were alarmed by the

amounts of pesticides turning up in hives. One study found 66 different pesticides in one hive. Not only were three-quarters of these pesticides toxic to bees, but the combined effects multiply the toxicity by as much as 1,000 times.

Research conducted in 23 U.S. states and Canada recently found 121 different pesticides in 887 samples of bees, wax, pollen and hives. Scientists strongly suspect that pesticides are a key component of colony collapse disorder.

Even low-level pesticide exposure weakens bees' immune systems. Stressed bees are highly susceptible to mites that spread viruses and to fungal parasites that cause bee diarrhea.

Of even more concern was that three out of five pollen and wax samples from the 23 states had at least one systemic pesticide: a chemical designed to spread throughout all parts of a plant.

Essentially, bees are harvesting pollen laced with lethal poison and feeding it to their young. In addition, many of these systemic pesticides are from a family of highly toxic chemicals called neonicotinoids. Bees exposed to these chemicals exhibit symptoms similar to humans afflicted with Parkinson's disease or Alzheimer's.

Happily, a unique population of honeybees, *Apis mellifera*, isolated for perhaps 10,000 years, has been found living at an oasis in the northern Sahara Desert. This pathogen-free population is being studied for possible genetic traits that enable these bees to fend off the *Varroa destructor* parasite mite and help beekeepers worldwide.

A colony of bees requires the equivalent of 20 football fields, each full of flowers, to make a living for 30 days. In the wild, almost 40 full-sized maple, basswood, black locust, magnolia, eucalyptus, apple and tulip trees per acre have almost 1 million blossoms that can support one colony of bees for part of its harvesting season.

What can you do to help honeybees? You can support organic farming and local beekeepers.

You also can consider what Albert Einstein said: If bees disappeared from Earth, man would have no more than four years to live.

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